

Appln No. 10/625,834
Amdt date June 24, 2005
Reply to Office action of May 10, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for controlling a craft within an operational area, comprising:

providing a tracking and command system that floats above the operational area ~~is afloat~~ and coupled to the craft through a transceiver;

generating imaging information of ~~an~~ the operational area by the tracking and command system;

generating a path for the craft by the tracking and command system using the imaging information;

generating a set of craft commands for the craft by the tracking and command system using the path; and

transmitting the craft commands by the tracking and command system to the craft via the transceiver.

2. (Previously Presented) The method of claim 1, wherein generating a path for the craft further includes:

identifying the craft's position within the operational area by the tracking and command system using the imaging information;

identifying a target by the tracking and command system using the imaging information; and

determining a path between the craft's position and the target.

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3. (Previously Presented) The method of claim 2, wherein the craft further includes an instrument suite and generating a path for the craft further includes:

collecting operational area information from the instrument suite by the craft;

transmitting the operational area information from the craft to the tracking and command system; and

generating a path for the craft further using the operational area information.

4. (Original) The method of claim 1, wherein the tracking and command system is airborne.

5. (Original) The method of claim 4, wherein the tracking and command system is supported by a lighter-than-air aircraft.

6. (Original) The method of claim 5, wherein the lighter-than-air aircraft is tethered.

7. (Original) The method of claim 5, wherein the lighter-than-air aircraft includes a thrust generating element.

8. (Previously Presented) The method of claim 4, wherein the tracking and command system is supported by a heavier-than-air aircraft.

9. (Previously Presented) The method of claim 1, wherein the craft includes means for collision avoidance.

10. (Currently Amended) A multi-agent autonomous system, comprising:

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a tracking and command system that is ~~afloat~~floating, the tracking and command system including:

a transceiver;

an operational area imager; and

a craft path planning module coupled to the operational area imager and the transceiver; and

a craft coupled to the tracking and command system through the transceiver.

11. (Previously Presented) The multi-agent autonomous system of claim 10, further comprising:

a craft position module coupled to the operational area imager and the path planning module; and

a reconnaissance target identification module coupled to the operational area imager and the path planning module.

12. (Previously Presented) The multi-agent autonomous system of claim 10, wherein the craft further includes an instrument suite.

13. (Original) The multi-agent autonomous system of claim 10, wherein the tracking and command system is airborne.

14. (Original) The multi-agent autonomous system of claim 13, wherein the tracking and command system is supported by a lighter-than-air aircraft.

15. (Original) The multi-agent autonomous system of claim 14, wherein the lighter-than-air aircraft is tethered.

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16. (Original) The multi-agent autonomous system of claim 14, wherein the lighter-than-air aircraft includes a thrust generating element.

17. (Original) The multi-agent autonomous system of claim 13, wherein the tracking and command system is supported by a heavier-than-air aircraft.

18. (Previously Presented) The multi-agent autonomous system of claim 10, wherein the craft includes means for collision avoidance.

19. (Currently Amended) A tracking and command system for controlling a craft within an operational area, comprising:

a processor;

a memory coupled to the processor, the memory having program instructions executable by the processor stored therein, the program instructions including:

generating imaging information of an operational area;

generating a path for the craft using the imaging information;

generating a set of commands for the craft using the path; and

transmitting the craft commands to the craft via a transceiver,

wherein the tracking and command system is ~~afloat~~floating.

20. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 19, the program instructions for generating a path for the craft

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further including:

identifying the craft's position within the operational area using the imaging information;

identifying a target using the imaging information;
and

determining a path between the craft's position and the target.

21. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 19, wherein the craft further includes an instrument suite and the program instructions for generating a path for the craft further include:

receiving operational area information collected from the instrument suite by the craft;

transmitting the operational area information from the craft to the tracking and command system; and

generating a path for the craft using the operational area information and the imaging information.

22. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 19, wherein the tracking and command system is airborne.

23. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 19, wherein the tracking and command system is supported by a lighter-than-air aircraft.

24. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 23, wherein the lighter-than-air aircraft is tethered.

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25. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 23, wherein the lighter-than-air aircraft includes a thrust generating element.

26. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 19, wherein the tracking and command system is supported by a heavier-than-air aircraft.

27. (Previously Presented) The tracking and command system for controlling a craft within an operational area of claim 19, wherein the craft further includes:

- a proximity sensor;

- a drive mechanism; and

- a controller coupled to the proximity sensor and drive mechanism, the controller programmed to avoid collisions using signals received from the proximity sensor.

28. (Currently Amended) A multi-agent autonomous system, comprising:

- a self-propelled craft deployed in an operational area;

- a tracking and command system that is ~~afloat~~floating and coupled to the craft, the tracking and command system including:

- an imager for generating imaging information of the operational area;

- a path planner for planning a path for the craft using the imaging information;

- a craft command generator for generation of craft commands using the path; and

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a craft commander for transmitting the craft commands to the craft.

29. (Previously Presented) The multi-agent autonomous system of claim 28, further comprising:

a craft position determiner for determining the position and heading of the craft using the imaging information;

a reconnaissance target identifier for identifying targets using the imaging information.

30. (Previously Presented) The multi-agent autonomous system of claim 10, wherein the craft further comprises an instrument suite for collection of operational area information.

31. (Original) The multi-agent autonomous system of claim 28, further comprising an aircraft for supporting the tracking and command system.

32. (Original) The multi-agent autonomous system of claim 31, wherein the aircraft includes a tether for tethering the aircraft.

33. (Original) The multi-agent autonomous system of claim 31, wherein the aircraft includes a thrust generating element for maneuvering the aircraft.

34. (Previously Presented) The multi-agent autonomous system of claim 28, wherein the craft further includes:

a proximity sensor for detecting an object in close proximity to the craft; and

a controller, responsive to the proximity sensor, for avoiding a collision with the object.

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35. (Previously Presented) The multi-agent autonomous system of claim 28, wherein the tracking and command system is airborne.

36. (Previously Presented) The multi-agent autonomous system of claim 31, wherein the aircraft is lighter-than-air.

37. (Previously Presented) The multi-agent autonomous system of claim 31, wherein the aircraft is heavier-than-air.

38. (Previously Presented) A method for controlling a craft within an operational area, comprising:

- providing a first tracking and command system at a first distance from the operational area and coupled to the craft through a transceiver;

- providing an operational area imager at a second distance from the operational area;

- generating a first imaging dataset of the operational area by the first tracking and command system;

- generating a second imaging dataset of the operational area by the operational area imager;

- generating a first path for the craft by the first tracking and command system using the first imaging dataset;

- generating a first set of commands for the craft by the first tracking and command system using the first path; and

- transmitting the first set of commands by the first tracking and command system to the craft via the transceiver.

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39. (Previously Presented) The method for controlling a craft of claim 38, further comprising:

- providing a second tracking and command system coupled to the operational area imager;

- generating a second path for the first tracking and command system using the second imaging dataset;

- generating a second set of commands for the first tracking and command system by the second tracking and command system using the second path; and

- transmitting the second set of commands by the second tracking and command system to the first tracking and command system.

40. (Previously Presented) A method for controlling a craft within an operational area, comprising:

- providing a mobile tracking and command system coupled to the craft through a transceiver;

- generating imaging information of an operational area by the tracking and command system;

- generating a path for the craft by the tracking and command system using the imaging information;

- generating a set of craft commands for the craft by the tracking and command system using the path; and

- transmitting the craft commands by the tracking and command system to the craft via the transceiver.

41. (Previously Presented) A multi-agent autonomous system, comprising:

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a first tracking and command system at a first distance from an operational area, the tracking and command system including:

a transceiver;

a first operational area imager; and

a first path planning module coupled to the operational area imager and the transceiver;

a second operational area imager at a second distance from the operational area and coupled to the first tracking and command system; and

a craft coupled to the first tracking and command system through the transceiver,

wherein the first distance and the second distance are different.

42. (Previously Presented) The multi-agent autonomous system of claim 41, further comprising a second tracking and command system coupled to the second operational area imager, the second tracking and command system comprising a second path planning module.

43. (Previously Presented) A multi-agent autonomous system, comprising:

a mobile tracking and command system, the tracking and command system including:

a transceiver;

an operational area imager; and

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a craft path planning module coupled to the operational area imager and the transceiver; and

a craft coupled to the tracking and command system through the transceiver.

44. (Previously Presented) A tracking and command system for controlling a craft within an operational area, comprising:

a processor;

a memory coupled to the processor, the memory having program instructions executable by the processor stored therein, the program instructions including:

generating imaging information of the operational area;

generating a path for the craft using the imaging information;

generating a set of commands for the craft using the path; and

transmitting the craft commands to the craft via a transceiver,

wherein the tracking and command system is mobile.

45. (Previously Presented) A multi-agent autonomous system, comprising:

a self-propelled craft deployed in an operational area;

a first tracking and command system at a first distance from the operational area and coupled to the craft, the first tracking and command system including:

a first imager for generating a first imaging dataset of the operational area;

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a first path planner for planning a first path for the craft using the first imaging dataset;

a first command generator for generation of a first set of commands using the path; and

a first craft commander for transmitting the first set of commands to the craft; and

a second imager at a second distance from the operational area for generating a second imaging dataset of the operational area, the second imager coupled to the first tracking and command system,

wherein the first distance and the second distance are different.

46. (Previously Presented) The multi-agent autonomous system of claim 45, further comprising a second tracking and command system coupled to the second imager, the second tracking and command system comprising:

a second path planner for planning a second path for the first tracking and command system using the second imaging dataset;

a second command generator for generation of a second set of commands using the second path; and

a second commander for transmitting the second set of commands to the first tracking and command system.

47. (Currently Amended) A multi-agent autonomous system, comprising:

a self-propelled craft deployed in an operational area;

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a mobile tracking and command system spaced from and coupled to the craft through a transceiver, the tracking and command system including:

an imager for generating imaging information of the operational area;

a path planner for planning a path for the craft using the imaging information;

a craft command generator for generation of craft commands using the path; and

a craft commander for transmitting the craft commands to the craft through the transceiver.

48. (Previously Presented) A method of gathering and processing information from an area comprising:

providing a first sensor with a first perspective of the area;

providing a second sensor with a second perspective of the area;

sensing a first characteristic of the area with the first sensor to generate a first dataset;

sensing a second characteristic of a portion of the area with the second sensor to generate a second dataset;

generating a combined dataset by integrating the second dataset into the first dataset; and

storing the combined dataset.

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49. (Previously Presented) The method of claim 48, further comprising transmitting the combined dataset to a remote location.

50. (Previously Presented) The method of claim 48, further comprising transmitting the first dataset and the second dataset to a remote location.

51. (Previously Presented) The method of claim 48, wherein the first dataset includes a lower level of detail than the second dataset.

52. (Previously Presented) The method of claim 48, wherein at least one of the first dataset and the second dataset is an image.

53. (Previously Presented) The method of claim 48, wherein the combined dataset is an image.

54. (Previously Presented) The method of claim 48, wherein the first characteristic and the second characteristic are identical.

55. (Previously Presented) The method of claim 48, wherein the first characteristic and the second characteristic are different.

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56. (Previously Presented) The method of claim 54, wherein the first characteristic is visible light.